WHAT IS CLAIMED:

1. A purified polypeptide comprising an amino acid sequence selected from the group consisting of:

a) the amino acid sequence of SEQ ID NO:2, and

b) a fragment of SEQ ID NO:1 comprising the kinesin motor domain from amino acid residue 1 to amino acid residue 340.

2. An isolated polypeptide of claim 1, having a sequence of SEQ ID NO:2.

3. A composition comprising a polypeptide of claim 1 and a pharmaceutically acceptable excipient.

4. A composition of claim 3, wherein the polypeptide has the sequence of SEQ ID NO:2.

5. A method for screening a compound for effectiveness as an agonist of a polypeptide of claim 1, the method comprising:

a) exposing a sample comprising a polypeptide of claim 1 to a compound, and

b) detecting agonist activity in the sample.

6. A method for screening a compound for effectiveness as an antagonist of a polypeptide of claim 1, the method comprising:

a) exposing a sample comprising a polypeptide of claim 1 to a compound, and

b) detecting antagonist activity in the sample.

7. An isolated and purified polynucleotide encoding a polypeptide comprising an amino acid sequence of SEQ ID NO:1.

8. An isolated and purified polynucleotide which hybridizes under conditions of 250 mM NaCl, 25 mM trisodium citrate, 1% SDS, 50% formamide and

200 µg/ml ssDNA at 42°C., and wash conditions of 15 mM NaCl, 1.5 mM trisodium citrate, and 0.1% SDS at 68°C to the polynucleotide of claim 7.

9. A method for detecting a polynucleotide, the method comprising the steps of:

(a) hybridizing the polynucleotide of claim 7 to at least one nucleic acid in a sample, thereby forming a hybridization complex; and

(b) detecting the hybridization complex, wherein said hybridization is performed at 42°C in a solution containing 250 mM NaCl, 25 mM trisodium citrate, 1% SDS, 50% formamide and 200 µg/ml ssDNA followed by washing at 68°C in a solution of 15 mM NaCl, 1.5 mM trisodium citrate, and 0.1% SDS wherein the presence of the hybridization complex correlates with the presence of the polynucleotide in the sample.

10. The method of claim 9 further comprising amplifying the polynucleotide prior to hybridization.

11. An isolated and purified polynucleotide comprising the polynucleotide sequence of SEQ ID NO:1.

12. An expression vector comprising the polynucleotide of claim 7.

13. A host cell comprising the expression vector of claim 12.

14. A method for producing a polypeptide, the method comprising the steps of:

(a) culturing the host cell of claim 13 under conditions suitable for the expression of the polypeptide; and

(b) recovering the polypeptide from the host cell culture.

15. Method of modulating cellular proliferation in a mammal in need thereof comprising administering to said mammal an amount of a pharmaceutical composition effective to modulate cellular proliferation, said composition comprising a pharmaceutically acceptable vehicle and a HsCENP-E protein characterized as

having an ATP binding site, a motor domain and an amino acid sequence as set forth in SEQ ID NO:2.

16. A method for inhibiting HsCENP-E mediated/induced cellular proliferation of a cell in culture, said method comprising the steps of:

a) providing an oligonucleotide comprising at least 18 contiguous nucleotide bases which are perfectly complementary to a nucleotide base sequence region contained in a nucleic acid sequence as set forth in SEQ ID NO.1, and

b) contacting said cell with said oligonucleotide under conditions such that said oligonucleotide is delivered within said cell and hybridizes with said nucleotide base sequence region, thereby inhibiting HsCENP-E mediated/induced cellular proliferation of said cell.

17. A method of detecting the presence of cancer in an individual comprising:

(a) obtaining a biological sample from said individual;

(b) incubating said biological sample with at least one antibody which is immunoreactive with a gene product encoded by the nucleic acid molecule comprising the nucleotide sequence as set forth in SEQ ID NO:1

(c) detecting immunoconjugates which form as a consequence of the incubation of step (b); and

(d) relating the amount of immunoconjugates of step (c) to the presence of cancer, wherein cancer is present when said amount is greater than a threshold value.

18. An isolated and substantially purified polypeptide encoded by the nucleotide sequence of SEQ ID NO:1.